



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D206-642-241
Job Sheet 192252



Part No: D206-642-241

Job Qty: 1 ea

Part Name: Replacement Skidtube, High Gear with Standard Wearplates Fits LH or RH



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 3/20/19

Job Tracking No:

Due Date: 4/5/19

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG REV F(DEO) IPP Rev: 04.12.02 Revised procedural steps KJ/JLM IPP RevP: revise and update route/bom DD 10.01.06 verf:EC IPP rev Q 10.02.19 per PAR 09-043 EC verified by: DD IPP Rev:R 12.11.22 now swage per ecn12-679 DD verf:JLM IPP Rev:S 14.04.24 ECN14-520 DD verf:JLM

Ship Via:

Bill of Materials



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL : 1 613 632 - 5200
Email: sales@dartaero.com
www.dartaerospace.com

Container No: S169126



Part: D206-642-241

Job No: 192252

Serial No/Batch: S169126

Revision:

Inspector:

Exp Date:

Instructions: FAA STC SA00475SE 18/10/17, TC STC SH98-4 Issue 2, EASA STC

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		4/5/19	0.00	0.00	Start Up Skidtubes-1		BE
110	Skidtubes	1 pcs		4/5/19	0.00	2.22	Skidtubes-2		BE, TF
120	QC	1 pcs		4/5/19	0.00	0.00	QC5		PD 19-04-15
130	QC	1 pcs		4/5/19	0.00	0.00	QC9		
140	HandFinish	1 pcs		4/5/19	0.00	0.33	HandFinish1		D.R. 19/04/15
150	QC	1 pcs		4/5/19	0.00	0.00	QC7-1		M664
160	Skidtubes	1 pcs		4/5/19	0.00	2.50	Skidtubes-2		TF
180	Skidtubes	1 pcs		4/5/19	0.00	2.50	Skidtubes-2		TF
190	QC	1 pcs		4/5/19	0.00	0.00	QC5		BE
200	Skidtubes	1 pcs		4/5/19	0.00	2.50	Skidtubes-2		BE DD
220	QC	1 pcs		4/5/19	0.00	0.00	QC9		PD 19-04-23
230	QC	1 pcs		4/5/19	0.00	0.00	QC5		PD 19-04-23
240	HandFinish	1 pcs		4/5/19	0.00	0.33	HandFinish2		D.R. 19/04/23
250	Powdercoat	1 pcs		4/5/19	0.00	0.28	Powdercoat1		BE 19-04-23
260	QC	1 pcs		4/5/19	0.00	0.00	QC3		PD 19-04-24
270	HandFinish	1 pcs		4/5/19	0.00	1.06	HandFinish3		SL
300	QC	1 pcs		4/5/19	0.00	0.00	QC5		DAS 21
305	DC	1 pcs		4/5/19	0.00	0.00	DC		APR 26 2019 9:38
310	Packaging	1 pcs		4/5/19	0.00	0.00	Packaging3-1		DAS 21
320	QC21-FG	1 Ea		4/5/19	0.00	0.00	QC21		APR 26 2019 9:38

Part Op 110 - 1-Deburr Fwd edge of tube 2- Remove ridge on inside of Fwd edge of tube as per Dwg D2650 3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required. 4-Grind weld flush to cap on top surface only. 5-Cut Aft end as per dwg D2650 from front of tube and Deburr 6-Remove inner indexing ridge on Aft end of skidtube as per Dwg D2650 7-Open holes for Aft end cap as per Dwg D2650 with #30 Drill Bit using DT8025. 8-Drill pilot holes using Dt 8167. 9-Locate DT8732A from inner Aft saddle hole & 3rd crossbolt hole. Insert D3286-1 doubler using DT8732B & D206-642-241-T1, then locating doubler off of 3/16" holes, cleco DT8732A & doubler leaving DT8732B for added support. 10- Drill D3286-1 doubler rivet holes in tube using # 30 drill, spot drilling doubler at the same time. 11-Working from the center out, drill # 30 holes into D3286-1 doubler. Cleco each hole as it is being drilled. Verify angle of holes to accommodate rivet heads. 12-Remove 3/16" cleco's only and open GHW holes to Ø0.500" as per Dwg D2650 13-Remove D3286-1 doublers, identify orientation, deburr, then attach them to the workorder 14-Remove indexing edge using DT9779 as per Dwg D2650. Leave 0.070" wall minimum. 15-C'sink GHW rivet holes as per Dwg D2650 16-Open crossbolt holes to Ø0.375" 17-Drill pilot holes using DT8028-3, then open to Ø0.297" as per Dwg D2650. Open Aft cap hole #6. 18- Ream crossbolt spacer holes to 0.377". 19-

160 - 1- Open and c'sink one crossbolt spacer holes as per Dwg D2650 (DEO Detail B)(without cutting fluid) 2-Deburr and blow out all chips from inside the tube

180 - 1-Locate, install and rivet doublers as per Dwg D2650. Micro-shave rivets as required 2-Bond D2654-3 web in place as per QSI 015. Ensure holes line up.Allow 12 Hrs. cure time before cutting

200 - 1-Remove alodine in one area per DEO detail B from around hole and prepare for welding 2-Prep per QSI 005 and Insert one D2649 crossbolt spacer. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod. 3-Grind welds flush as per Dwg D2650. 4-Using DT8733, insert (2) D3286-3 spacers as per QSI 004 and Dwg D2650. Remember to back drill each hole to Ø0.402" before welding other side. Use SS rod as required. 5- Insert D4720-1 Spacer. Swage to 0.313" X 0.75" DP per QSI 002. Trim and grind flush per QSI 002 6- Install D2680-041 Nut Plate as per Dwg D2650

240 - Brush alodine tube on crossbolt spacer area, do not acid etch, do not dip tube in tank.

250 - Make sure Nut Plate Thread is protected using paint screw, and mask GHW studs. START TIME: 1:45. FINISH TIME: 2:15

270 - 1- Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate.

305 - Photocopy bluefile & type labels per PPP D206-642-241 CHG007

310 - Identify and pack for shipping as per PPP D206-642-241

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D2620	Skidtube, 206 Skidtube	1 pcs (1 ea)	90-Start up Operation	5165744
D2647	Cap	1 pcs (1 ea)	90-Start up Operation	5166078
D3286-1	Doubler	2 pcs (2 ea)	90-Start up Operation	5049486
CCR264SS3-3	Cherry Rivet	2 Ea (2 ea)	180-Skidtubes	FM137622
CR3212-4-03	Cherry Rivet	2 Ea (2 ea)	180-Skidtubes	FM137886-0
CR3212-4-04	Cherry Rivet	52 Ea (52 ea)+13	180-Skidtubes	5150213
D2654-3	Web	1 pcs (1 ea)	180-Skidtubes	5060120
D2649	Cross Bolt Spacer	1 pcs (1 ea)	200-Skidtubes	5156881
D3286-3	Spacer	2 pcs (2 ea)	200-Skidtubes	5140137
D4720-1	Spacer	17 pcs (17 ea)	200-Skidtubes	5154579
ALS4-1032-130	Rivnut	44 Ea (44 ea)	270-HandFinish	5057257
D2646	Aft Cap	1 pcs (1 ea)	270-HandFinish	5160607
D2651-1	Plug	18 pcs (18 ea)	270-HandFinish	5044163
D2651-3	O-Ring	18 pcs (18 ea)	270-HandFinish	5044163
D2680-041	Nut Plate	1 pcs (1 ea)	270-HandFinish	5164243
D3537-1	Wearpad	4 pcs (4 ea)	270-HandFinish	5177777
D3537-3	Wearpad	1 pcs (1 ea)	270-HandFinish	5114665
D4956-13	Wearplate Fwd	1 pcs (1 ea)	270-HandFinish	5031401
D4956-21	Wearplate Center	1 pcs (1 ea)	270-HandFinish	5077507
D4956-33	Wearplate Aft	1 pcs (1 ea)	270-HandFinish	5078551
MS27039-1-08	Screw 5133202-1 (x6)	46 Ea (46 ea)	270-HandFinish	5133202
MS27039-4-06	Screw	1 Ea (1 ea)	270-HandFinish	FM127039-40
NAS1149D0332J	Washer	46 Ea (46 ea)	270-HandFinish	5123446
NAS1149D0463J	Washer	1 Ea (1 ea)	270-HandFinish	5055952
				009401

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D2620	1	10	0
	D2647	1	8	0
	D3286-1	2	16	0
180-Skidtubes	CCR264SS3-3	2	243	0
	CR3212-4-03	2	120	0
	CR3212-4-04	52	763	0
200-Skidtubes	D2654-3	1	6	0
	D2649	1	78	0
	D3286-3	2	20	0
270-HandFinish	D4720-1	17	383	0
	ALS4-1032-130	44	9,221	0
	D2646	1	61	0
	D2651-1	18	113	0
	D2651-3	18	382	0
	D2680-041	1	23	0
	D3537-1	4	45	0
	D3537-3	1	22	0
	D4956-13	1	7	0
	D4956-21	1	6	0
	D4956-33	1	8	0
	MS27039-1-08	46	546	0
	MS27039-4-06	1	13	0
	NAS1149D0332J	46	2,969	0
	NAS1149D0463J	1	6,472	0

Part Specifications

Specifications could not be found.

Plex 3/20/19 9:09 AM Dart.lajeunesse.marie

QTY -1	QTY -3	QTY -5	QTY -7	PART NUMBER	DESCRIPTION
X				D2650-1	SKIDTUBE ASSEMBLY
	X			D2650-3	SKIDTUBE ASSEMBLY
		X		D2650-5	SKIDTUBE ASSEMBLY
			X	D2650-7	SKIDTUBE ASSEMBLY
1	1	1	1	D2600-1-160	EXTRUSION
1				D2654-1	WEB
	1			D2654-3	WEB
		1		D2654-5	WEB
			1	D2654-7	WEB
1	1	1	1	D2646	AFT CAP
1	1	1	1	D2647	CAP
17	18	19	23	D2649	CROSS BOLT SPACER
16	18	14	22	D2651-1	PLUG
16	18	14	22	D2651-3	O-RING
1	1	1	1	D2680-041	NUT PLATE
2	2			D3286-1	DOUBLER
2	2			D3286-3	STUD
42	44	54	60	ALS7-1032-130	INSERT (or AKS4-1032-130, ALS4-1032-130, ALS7-1032-130)
2	2	2	2	AN960JD10L	WASHER
2	2	2	2	CCR264SS3-3	RIVET
2	2	2	2	CR3212-4-03	RIVET
2	2	2	2	MS27039-1-08	SCREW
1	1	1	1	MS27039-4-06	SCREW
1	1	1	1	AN960JD416	WASHER
52	52			CR3212-4-04	RIVET

F

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 192252ms

19-03-20

DEO ATTACHED
RELEASED
08-07-23

NOTES:

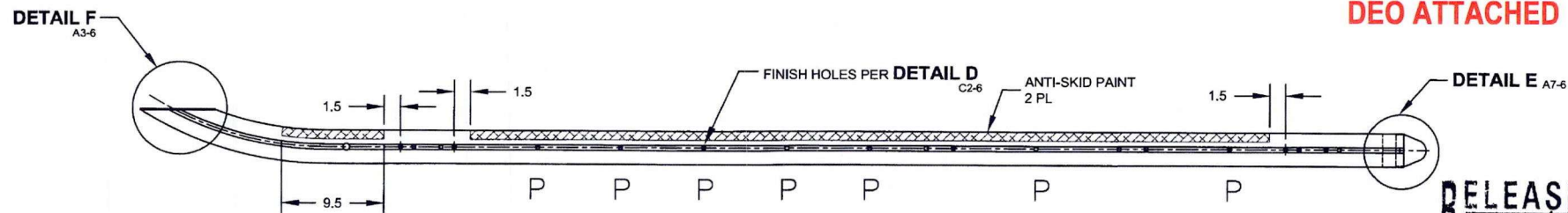
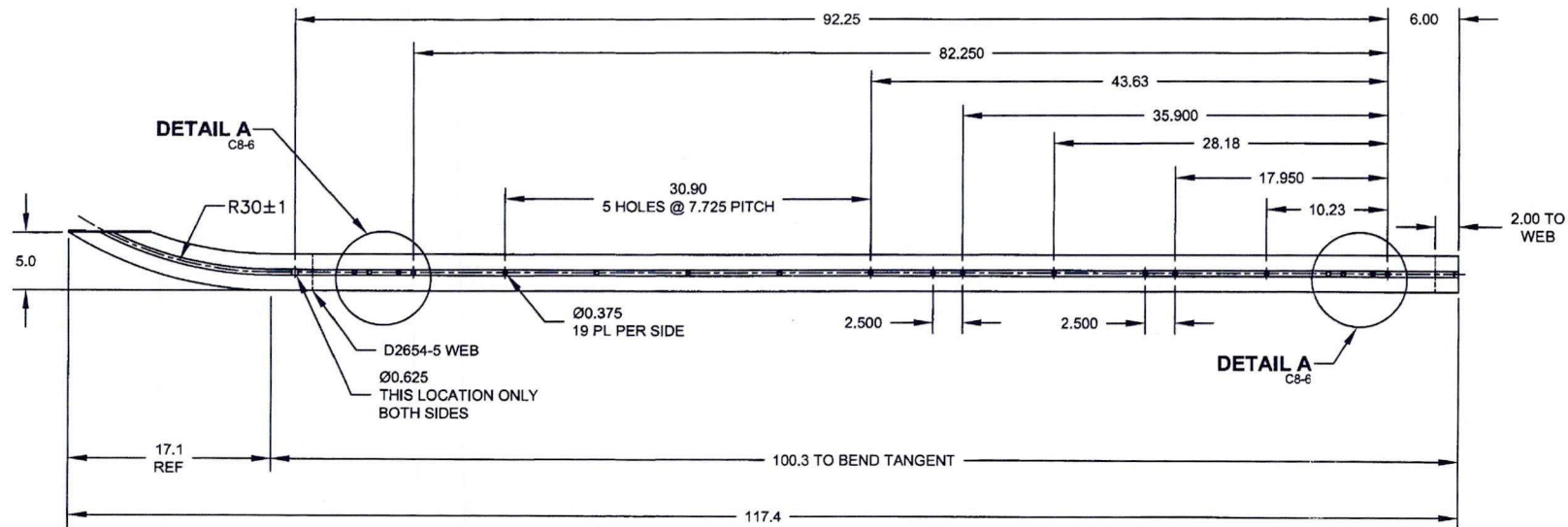
- 1) MATERIAL: N/A
- 2) FINISH: -CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
-POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
-BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) WELD PER DART QSI 004
- 9) DAMAGE TOLERANCE ON FWD BEND:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020 DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
- 10) BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015
- 11) INSERT D2651-1 PLUG C/W D2651-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE)
- 12) DRILL .20.297 FOR ALS7-1032-130 INSERTS USING TEMPLATE DT8056-1 ON -1 TUBE, DT8056-3 ON -3 TUBE, DT8056-5 ON -5 TUBE, AND DT8056-7 ON -7 TUBE. INSTALL INSERTS AFTER FINISH.
- 13) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

F	DRAWING UPDATED TO CURRENT STANDARDS. SHT 6 ADDED. ALL SECTION AND DETAIL VIEWS TRANSFERRED TO SHT 6. SHT 1 IN PL PART D2649 QTY UPDATED. SHT 6 SECT C-C GRIND INSTRUCTIONS DELETED FROM NOTE 7 (SEE NCR 239).	AJS	08.08.08
E	RMOVE CBORE, CHG DRILL, ADD CHAMFER	CP	06.03.30
D	REDRAW: INCCRP. DE09136/9153/9163 MOD GROUND HANDLING ON D2650-1/-3	CP	04.05.17
C	CHANGE HOLE PATTERN AND FRONT END	DS	97.10.29
B	AS MANUFACTURED CHANGES	DS	97.06.26
A	NEW ISSUE	DS	97.03.25
REV.	DESCRIPTION	BY	DATE
DESIGN	DS	DART AEROSPACE USA, INC PORT HADLOCK, WA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 1 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
DATE	08.08.08	COPYRIGHT © 1997 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



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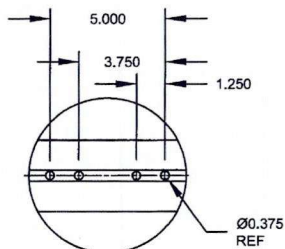
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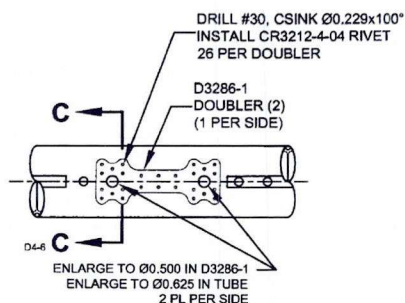
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MFG. APPR.		D2650	SHEET 4 OF 6
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DETAIL A
SCALE 2X
C2-2
D7-2
C2-3
D7-3
C2-4
D7-4
C2-5
D6-5

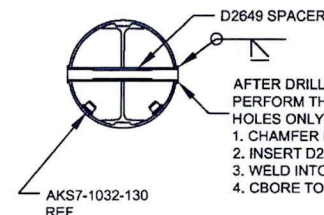
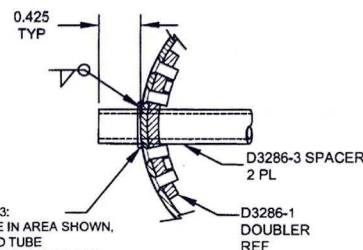


DETAIL B
SCALE 2X
C3-2
C3-3

- TO INSTALL D3286-1/3:
1. GRIND OFF FLANGE IN AREA SHOWN, FLUSH WITH ROUND TUBE
 2. LOCATE & DRILL D3286-1 DOUBLER USING DT3286-1T1
 3. ENLARGE HOLES IN D3286-1 TO Ø0.500
 4. ENLARGE HOLES IN TUBE TO Ø0.625 AND CHAMFER HOLE 0.030x45°
 5. RIVET D3286-1 TO TUBE
 6. INSERT D3286-3 SPACER
 7. WELD IN PLACE.

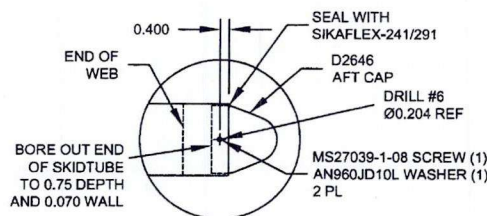


SECTION C-C C7-6
SCALE NONE

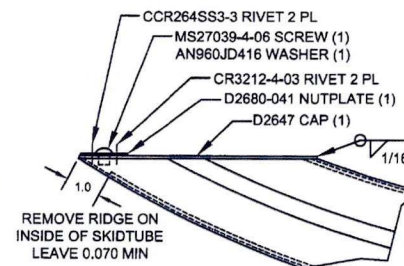
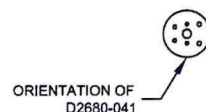


DETAIL D
FOR Ø0.375 HOLES ONLY
SCALE 3X
B4-2
B4-3
B4-4
B4-5

- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
1. CHAMFER HOLE 0.030 X 45°
 2. INSERT D2649 SPACER
 3. WELD INTO PLACE AND GRIND FLUSH
 4. CBORE TO Ø0.313 X 0.75 DP



DETAIL E
SCALE 2X
B2-2
B2-3
B1-4
B1-5



DETAIL F
SCALE NONE
B8-2
B8-3
B8-4
B8-5

- DETAIL F NOTES:**
1. CUT TUBE LEVEL
 2. REMOVE RIDGE ON FWD SIDE
 3. LOCATE D2647 (TRIM AS NECESSARY)
 4. WELD D2647 IN PLACE PER DART QSI 004
 5. GRIND FLUSH
 6. RIVET D2680-041 NUT PLATE IN PLACE

NOTE: MASK THREADS IN D2680-041 PRIOR TO FINISH

RELEASED

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DRAWN	AJS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 6 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
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DRAWING NO. D2650	TITLE 206/407 SKIDTUBE ASSEMBLIES	REV. F	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D2650-F-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>[Signature]</i>	CHECKED A.P.	MFG. APPR. <i>[Signature]</i>	APPROVED <i>[Signature]</i>		DE APPR. <i>[Signature]</i>		
DATE 12.10.12	DATE 12.10.22	DATE 12.10.22	DATE 12.10.22		DATE 12.10.22		

PURPOSE:

CHANGE C'BORED WELDED CROSSBOLT SPACERS TO SWAGED SPACERS

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

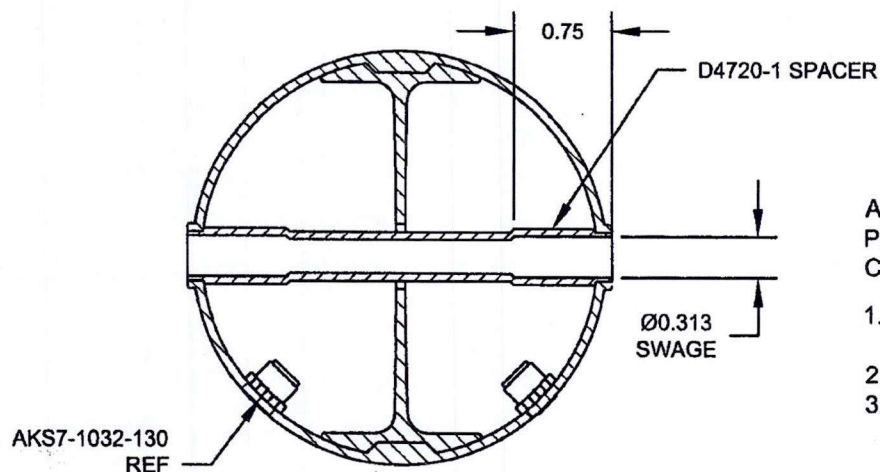
QTY	QTY	QTY	QTY	PART NUMBER	DESCRIPTION
-1	-3	-5	-7		
1	1	0	0	D2649	CROSS BOLT SPACER
16	17	19	23	D4720-1	SPACER

WAS:

17	18	19	23	D2649	CROSS BOLT SPACER
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ADD DETAIL G BELOW, WHICH IS THE SAME SECTION VIEW AS DETAIL D OF DWG.

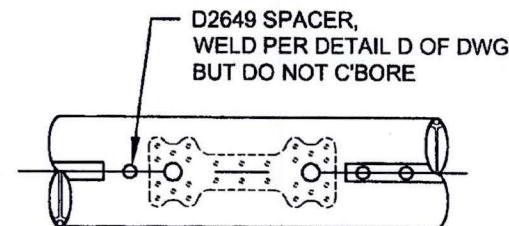
C'BORED HOLES ARE **NOW SWAGED** PER DETAIL G BELOW. FOR THE Ø0.375 HOLE THAT IS NOT C'BORED, WELD PER DETAIL D OF DWG (SEE AMENDED DETAIL B FOR REFERENCE).



DETAIL G

FOR Ø0.375 HOLES ONLY

FOR HOLES THAT ARE CURRENTLY C'BORED ONLY
NOT TO SCALE



DETAIL B

AMENDMENT TO DETAIL B
NOT TO SCALE

RELEASED
2012-11-16
[Signature]

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.375 HOLES THAT ARE
CURRENTLY C'BORED:

1. INSERT D4720-1 SPACER, 16 PL (-1) OR 17 PL (-3)
OR 19 PL (-5) OR 23 PL (-7)
2. SWAGE TO Ø0.313 X 0.75 DP PER QSI 002
3. TRIM / GRIND FLUSH PER QSI 002

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date : _____	Sequence #: _____	QTY Affected : _____		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled		FAULT CATEGORY ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					